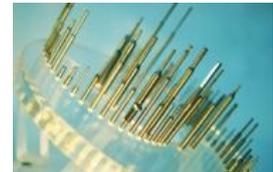




Case Study – Precision Micro Boring on Sliding Head machine

Eurotubes UK manufacturers 3000+ different types of what's known as wire guide tubes/wire guide nozzles; since 1986 they have made over 2.5million guides. These are small metal tubular parts, usually between 0.8mm-6mm OD, with inside diameters ranging from 0.2mm all the way up to 4mm ID's.



Selection of product

The wire guide tubes are usually mounted into multi-spindle, tag wrapping, coil winding machines and are used to very accurately layer enamelled copper wire onto the wound component; transformers, sensor coils, relay coils, electric motors etc...

This product is proudly manufactured 100% in the UK at factory premises on the Isle of Portland, on the South Coast of Dorset with 95% destined for export. Eurotubes UK manufacture the tubing from 13mm/10mm OD EN31 (stock bearing steel) using a die sinking cold drawn method – annealing in between each draw to prevent cracks in the final product.

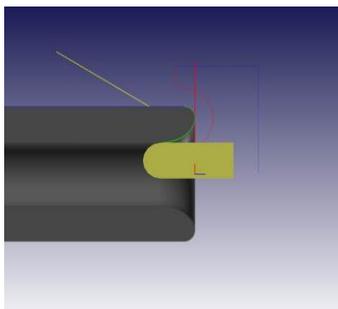


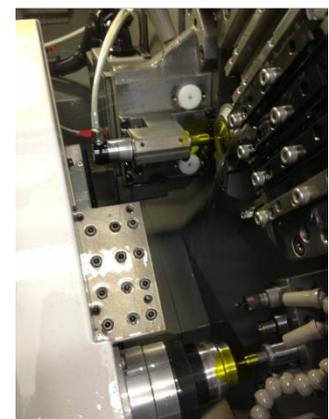
Diagram cutter path

Once the tube is the desired size it is centre-less ground and then placed onto a sliding head lathe. Here a new challenge starts. Surface finish in the guide bore is critical and with common ID's down to 0.2mm. Conventional machine methods could be problematic. Working alongside with the machine supplier and Emmaco U.K. Ltd a solution was reached.

Where usually a machine would have cross milling cutters facing the OD of the bar, alternative back working tool holder was fitted with a high frequency/RPM mini IBAG spindle is presented to the face of the bar; it's the same on the back working you can see in the image below right (highlighted yellow):

The Swiss-made IBAG spindles will reach in excess of 80,000 RPM. With all wire guides/coil winding it is absolutely critical not to harm/remove enamel from the wire at any point in the wind, so there are precisely calculated radii forms put on the front (outlet) and back (inlet) of the part. These forms are created using ball-nose milling cutters. With the IBAG spindle running at up to 75,000RPM and the machine spindle also rotating at low RPM the desired quality is achieved (diagram above left shows typical cutter path).

This change in manufacturing method from conventional machining has significantly increased consistent quality whilst reducing cycle times. Further machinery, of course with IBAG Spindles, has been commissioned to meet the global. With the correct tooling selection and the reliability of machine and the IBAG Spindles production can run 24 hours a day consistently producing high quality product.



Inside machine tool enclosure

Greg Bedford, Business Development Manager at Eurotubes UK quoted "the service and backup from Emmaco U.K. Ltd has been first class. Along with high quality of the spindle reliability and performance a potential challenging part of the process is now basically taken for granted".

If you have any difficult 'small bore' challenges or need some real high quality finish maybe IBAG can give a solution?

Emmaco UK are the sole agents for IBAG High Speed Spindle Drive Systems providing a comprehensive consultation, installation and service capability.

For more information please contact us at info@emmaco.co.uk or call 020 8398 7733. Further information on our products and services is available at www.emmaco.co.uk